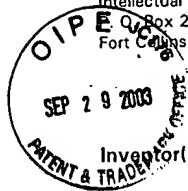


HEWLETT-PACKARD COMPANY
Intellectual Property Administration
Box 272400
Fort Collins, Colorado 80527-2400

PATENT APPLICATION

ATTORNEY DOCKET NO. 70006553-3



IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Investor(s): John Isaac Chandan Gomes et al

Confirmation No.: 2747

Application No.: 09/834261

Examiner:

Filing Date: Apr 12, 2001

Group Art Unit: 2171

Title: Method And Apparatus For Applying Information Remotely Via A Mobile Device

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

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OCT 01 2003

Technology Center 2100

TRANSMITTAL LETTER FOR RESPONSE/AMENDMENT

Sir:

Transmitted herewith is/are the following in the above-identified application:

- () Response/Amendment () Petition to extend time to respond
() New fee as calculated below () Supplemental Declaration
(X) No additional fee (Address envelope to "Mail Stop Non-Fee Amendment")
(X) Other: Drwg Transmittal Ltr, formal drwgs and Certified Copy of (fee \$)

SG200005507-9

CLAIMS AS AMENDED BY OTHER THAN A SMALL ENTITY						
(1) FOR	(2) CLAIMS REMAINING AFTER AMENDMENT	(3) NUMBER EXTRA	(4) HIGHEST NUMBER PREVIOUSLY PAID FOR	(5) PRESENT EXTRA	(6) RATE	(7) ADDITIONAL FEES
TOTAL CLAIMS	14	MINUS	20	= 0	X \$18	\$ 0
INDEP. CLAIMS	2	MINUS	3	= 0	X \$84	\$ 0
[] FIRST PRESENTATION OF A MULTIPLE DEPENDENT CLAIM					+ \$280	\$ 0
EXTENSION FEE	1ST MONTH \$110.00	2ND MONTH \$410.00	3RD MONTH \$930.00	4TH MONTH \$1450.00		\$ 0
OTHER FEES						\$
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT						\$ 0

Charge \$ 0 to Deposit Account 08-2025. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

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Date of Deposit:

Typed Name: Ramona J. Zaya

Signature:

Respectfully submitted,

John Isaac Chandan Gomes et al

By

Wendell J. Jones

Attorney/Agent for Applicant(s)
Reg. No. 45,961

Date:

Telephone No.: (650) 857-7453

**REGISTRY OF PATENTS
SINGAPORE**

This is to certify that the annexed is a true copy of the following Singapore patent application as filed in this Registry.

Date of Filing : 27 SEPTEMBER 2000

Application Number : 200005507-9

Applicant(s) : HEWLETT PACKARD COMPANY

Title of Invention : METHOD AND APPARATUS FOR
APPLYING INFORMATION REMOTELY VIA
A MOBILE DEVICE


CHIG KAM TACK
Assistant Registrar
for REGISTRAR OF PATENTS
SINGAPORE

SINGAPORE
PATENTS ACT
(CHAPTER 221)
PATENTS RULES

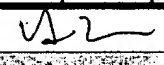
The Registrar of Patents
Registry of Patents

2 0 0 0 0 5 5 0 7 - 9 1
27 SEP 2000

REQUEST FOR THE GRANT OF A PATENT
THE GRANT OF A PATENT IS REQUESTED BY THE UNDERSIGNED ON THE BASIS OF THE PRESENT
APPLICATION

I. Title of Invention	Method And Apparatus For Applying Information Remotely Via A Mobile Device	
II. Applicant(s) (See note 2)	(a) Name	Hewlett-Packard Company
	Body Description/ Residency	A company incorporated under the laws of the State of Delaware, United States of America
	Street Name & Number	3000 Hanover Street
	City	Palo Alto
	State	California 94304
	Country	United States of America
	(b) Name	
	Body Description/ Residency	
	Street Name & Number	
	City	
	State	
	Country	
	(c) Name	
	Body Description/ Residency	
	Street Name & Number	
	City	
	State	
	Country	

III. Declaration of Priority (see note 3)	Country/Country Designated		File no.		
	Filing Date				
	Country/Country Designated		File no.		
	Filing Date				
	Country/Country Designated		File no.		
	Filing Date				
IV. Inventors (See note 4)					
(a) The applicant(s) is/are the sole/joint inventor(s).		<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
(b) A statement on Patent Form 8 is/will be furnished.		<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
V. Name of Agent (if any) (See note 5)		Intellectual Property, Asia Pacific / Legal Department Hewlett-Packard Far East Pte Ltd			
VI. Address for Service (See note 6)		Block/Hse No	450	Level No	12th
		Unit No/PO Box		Postal Code	119960
		Street Name		Alexandra Road	
		Building Name			
VII. Claiming an earlier filing date under section 20(3), 26(6) or 47(4). (See note 7)		Application No			
		Filing Date			
		[Please tick in the relevant space provided]:			
		() Proceeding under rule 27(1)(a).			
		Date on which the earlier application was amended =			
		Or			
		() Proceeding under rule 27(1)(b).			

VIII. Invention has been displayed at an International Exhibition (See note 8)		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
IX. Section 114 requirements (See note 9)		The invention relates to and/or used a micro-organism deposited for the purposes of disclosure in accordance with section 114 with a depository authority under the Budapest Treaty. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
X. Check List (To be filled in by applicant or agent)	A. The application contains the following number of sheet(s):-		
	1. Request	4	sheets
	2. Description	9	sheets
	3. Claim(s).	3	sheets
	4. Drawing(s).	1	sheets
	5. Abstract.	1	sheets
	B. The application as filed is accompanied by:-		
	1. Priority document		
	2. Translation of priority document		
	3. Statement of Inventorship & right to grant	X	
4. International Exhibition Certificate			
XI. Signature(s) (See note 10)	Applicant (a)	Hewlett-Packard Far East Pte Ltd 	
	Date	27 September 2000	
	Applicant (b)		
	Date		
	Applicant (c)		
	Date		

NOTES:

1. This form when completed, should be brought or sent to the Registry of Patents together with the prescribed fee and 3 copies of the description of the invention, and of any drawings.
2. Enter the name and address of each applicant in the spaces provided at paragraph II. Names of individuals should be indicated in full and the surname or family name should be underlined. The names of all partners in a firm must be given in full. The place of residence of each individual should also be furnished in the space provided. Bodies corporate should be designated by their corporate name and country of incorporation and, where appropriate, the state of incorporation within that country should be entered where provided. Where more than 3 applicants are to be named, the names and address of the fourth and any further applicants should be given on a separate sheet attached to this form together with the signature of each of these further applicants.
3. The declaration of priority at paragraph III should state the date of the previous filing, the country in which it was made, and indicate the file number, if available. Where the application relied upon in an International Application or a regional patent application e.g. European patent application, one of the countries designated in that application [being one falling under the Patents (Convention Countries) Order] should be identified and the name of that country should be entered in the space provided.
4. Where the applicant or applicants is/are the sole inventor or the joint inventors, paragraph IV should be completed by marking the 'YES' Box in the declaration (a) and the 'NO' Box in the alternative statement (b). Where this is not the case, the 'NO' Box in declaration (a) should be marked and a statement will be required to be filed on Patents Form 8.
5. If the applicant has appointed an agent to act on his behalf, the agent's name should be indicated in the spaces available at paragraph V.
6. An address for service in Singapore to which all documents may be sent must be stated at paragraph VI. It is recommended that a telephone number be provided if an agent is not appointed.
7. When an application is made by virtue of section 20(3), 26(6) or 47(4), the appropriate section should be identified at paragraph VII and the number of the earlier application or any patent granted thereon identified. Applicants proceeding under section 26(6) should identify which provision in rule 27 they are proceeding under. If the applicants are proceeding under rule 27(1)(a), they should also indicate the date on which the earlier application was amended.
8. Where the applicant wishes an earlier disclosure of the invention by him at an International Exhibition to be disregarded in accordance with section 14(4)(c), then the 'YES' Box at paragraph VIII should be marked. Otherwise the 'NO' Box should be marked.
9. Where in disclosing the invention the application refers to one or more micro-organisms deposited with a depository authority under the Budapest Treaty, then the 'YES' Box at paragraph IX should be marked. Otherwise the 'NO' Box should be marked.
10. Attention is drawn to rules 90 and 105 of the Patent Rules. Where there are more than 3 applicants, see also Note 2 above.
11. Applicants resident in Singapore are reminded that if the Registry of Patents considers that an application contains information the publication of which might be prejudicial to the defence of Singapore or the safety of the public, it may prohibit or restrict its publication or communication. Any person resident in Singapore and wishing to apply for patent protection in other countries must first obtain permission from the Singapore Registry of Patents unless they have already applied for a patent for the same invention in Singapore. In the latter case, no application should be made overseas until at least 2 months after the application has been filed in Singapore.

For Official Use

Application Filing Date: / /

Request received on : / /

Fee received on : / /

Amount :

*Cash/Cheque/Money Order No:

**Delete whichever is inapplicable*

METHOD AND APPARATUS FOR APPLYING INFORMATION
REMOTELY VIA A MOBILE DEVICE

BACKGROUND OF THE INVENTION

This invention relates to method and apparatus for applying information remotely via a mobile device.

Conventionally, after editing and formatting a document by using his computer application, getting an email with or without attachment, or browsing a website, a user can apply the information to an appliance. For example, the user can generate a hard copy of it by sending the information from the computer to an appliance, such as a printer connected to the computer directly or via a network, or a fax machine. The user can also send the information to a projector for displaying it. When the user is travelling, however, he has to carry the edited document in a portable media or a laptop for accessing and processing it. He may also need the laptop for retrieving emails or surfing on internet. If he wants a printed version of the document, the email, the attachment, and so on, or if he wants to project it, he has to connect the laptop to an appropriate appliance, and quite often, to install the appliance. These may not be desirable, especially for a user who travels often.

With the advent of mobile revolution, mobile devices such as mobile phones and personal digital assistants provide a solution to access information or data remotely. Some devices even allow the user to store some information therein. Nevertheless, the user of the mobile devices cannot apply the information to an appliance conveniently in that he still needs to physically connect the devices with an appliance. Furthermore, due to the compactness and the limitation of size, most mobile devices are in short of storage space and processing power. Inevitably, this limits the capacity of information or data that a user can store or retrieve. Besides, some mobile devices such like mobile phones do not even allow applications such as WinWord to be run thereon. Therefore, users of these mobile devices are restrained from accessing documents thus created.

SUMMARY OF THE INVENTION

In a preferred embodiment, the invention provides a convenient method and apparatus to allow a user of a mobile device to apply information stored remotely to an appliance.

In a preferred embodiment according to one aspect of the invention, in a method for applying information stored remotely to an appliance via a mobile device, the mobile device initiates the process by sending instructions to a first computer system via a first network. The instructions designate a first piece of information to be processed as well as the appliance to which the information is to be applied. The appliance is connected to the first computer system. According to the instructions, the first computer system retrieves the first piece of information and converts the information to a document suitable for the appliance. The first computer system then applies the document to the designated appliance.

Preferably, a plurality of appliances is registered in the first computer system. Said plurality of appliances can be connected to the first computer system via a second network. The mobile device designates a first appliance from said plurality of appliances by specifying it in the instructions.

In the preferred embodiment, the mobile device designates the first piece of information by incorporating the location thereof into the instructions.

Furthermore, the first network includes a gateway with which the mobile device communicates by using standard telecommunication protocols. The gateway converts the instructions to a format understandable by the first computer system. Preferably, the instructions are converted to a format suitable for transfer through internet.

The first piece of information can be stored in a second computer. The first computer system retrieves the information from the second computer for further processing.

The first appliance can be a printer, a fax machine, or a projector. In a preferred embodiment, the first appliance is a printer and the first computer system converts the first piece of information to a print job the format of which is suitable for printing.

According to another aspect of the invention, a preferred embodiment of a computer system suitable for the invented method has an interface for receiving instructions from the mobile device via a first network. The instructions designate a first piece of information to be processed and the appliance to which the designated information is to be applied. The appliance is connected to the computer system. The computer system also has a sub-system for processing the instructions and retrieving the designated information. The sub-system further applies the document to the appliance.

Preferably, the mobile device designates the first piece of information by incorporating the location thereof into the instructions such that the computer system is capable of retrieving the first piece of information.

Further, the sub-system also converts the information to a document suitable for the appliance. In the preferred embodiment, the appliance is a printer, and the computer converts the first piece of information to a print job the format of which is suitable for printing.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates a preferred embodiment of the invention;

DETAILED DESCRIPTION OF THE INVENTION

In a preferred embodiment according to the invention as shown in Figure 1, a user of a mobile device 100 such as a mobile phone can print documents stored in his personal computer 110 to a printer 118. To enable the user to access the documents remotely, the documents have been shared out to a central server 106 via internet 108, that is, filenames and locations of these documents are saved in the central server 106. While the user selects the files to be shared, a string of information is packed into an HTTP packet in a format shown below:

- HTTP header
- /MapleWML/CMServer/AddFile.asp
- Username (computer name for identifying the user's personal computer)
- User Password (for the purpose of security)
- Actual Path (Filename as in the user's personal computer 110)
- User Entered Name (e.g., A friendly name for the file)
- File Size
- HTTP Trailer.

The parameter "User Entered Name" identifies and is associated with the actual location of the individual file to be shared. By selecting such a user-entered-name as discussed later, the central server 106 is able to identify the file to be printed.

Such an HTTP packet then will be sent to the central server 106 via the internet 108. Upon receiving it, the central server 106 is activated by the parameter "/MapleWML/CMServer/AddFile.asp" to run a script. Thus the information following this parameter, i.e., the Username, User password, Actual Path, User Entered Name, and File size, will be added to a file database (not shown) of the central server 106. The file database stores the filenames as well as the locations of the files shared out by each user.

Further, the personal computer 110 needs to be in a public domain, that is, by using the Username and User Password thereof, other computers or servers can access and retrieve documents from it.

Besides, a plurality of appliances, including, for example, the printer 118, a fax machine 120, and a projector 122, is connected to an appliance server 116 and is registered in the central server 106. The central server 106 would know which appliances are login and where they are, through the Appliance IDs and appliance server Internet Protocol (IP) address. Similarly, the appliances get registered by the appliance server 116 sending the central server 106 an HTTP packet in the following format:

- HTTP header
- /MapleWML/CMServer/ApplianceLogin.asp
- Appliance ID
- Password for the Appliance Server
- Appliance Server IP Address
- HTTP Trailer,

wherein the parameter "/MapleWML/CMServer/ApplianceLogin.asp" is to activate the central server 106 to run a script such that the information following this parameter in the packet will be loaded to an appliance database (not shown) of the central server 106. The parameter "Appliance ID," preferably, the appliance name, identifies the appliance to be registered. The parameter "Appliance Server IP Address" helps the central server 106 to locate the appliance server 116, and further where the appliances are.

When the user is away from his computer 110 and wants a printed copy of his document, the user uses his mobile phone 100 to request the central server 106 for the information about those files he had shared. The request reaches the central server 106 via a Public Switched Telephone Network (PSTN) 104, a gateway 102 and the internet 108. For the communication between the mobile device 100 and the gateway 102, standard telecommunication protocols such as Wireless Application Protocols (WAP) are used. It is understood that WAP is used as a transport layer only. Higher data rate transport layer such as 3G can also be used. In the context of WAP, the mobile phone is WAP-enabled, and the request from the mobile device 100 is in the following format:

- WAP Header

- Username
- User Password
- WAP Trailer.

The gateway 102 converts the request, as well as instructions which will be discussed below, to an HTTP format suitable for transfer through the internet. Subsequently, the gateway 102 passes the request to the central server 106.

It is noted that the mobile device 100 needs to install settings for identifying the gateway 102 and the central server 106 in advance. The mobile device will then be able to contact the appropriate central server 106 via the appropriate gateway 102. Such a technology has been known in the field of wireless communication.

After receiving the request, the central server 106 packs a reply in the following HTTP format:

- HTTP Header
- <Filename>
- HTTP Trailer,

wherein the parameter "<Filename>" includes the user-entered-names of all the files shared out by this particular user, that is, files stored in the personal computer 110 and shared out. The central server 106 further sends the reply through the established connection towards the gateway 102, which in turn would convert it into a WAP format for displaying on the mobile device 100.

The user selects a document to be printed and a printer to which the document is to be printed via the mobile device 100. Such a selection is incorporated into an instruction, a printing instruction in the case of this embodiment, by the mobile device 100 according to the following format:

- WAP Header
- Username
- User Password
- A First Filename (user-entered-name)

- Appliance ID
- WAP Trailer.

The parameter "A First Filename" identifies the location of the document to be printed, while the parameter "Appliance ID" identifies the appliance to which the document is to be applied. In the case of printing a document, the "Appliance Id" will be the printer name of a selected printer.

The mobile device 100 then sends the printing instruction to the central server 106 via the PSTN 104, gateway 102, and the internet 108. After receiving such an instruction, the central server 106 requests for the document to be uploaded from the user's personal computer 110 by sending the personal computer 110 the contents of the parameter "A First filename." The central server 106 identifies and accesses the personal computer 110 via the parameters of "Username" and "User Password."

The personal computer 110 accordingly pack the file identified by the parameter "A first Filename" into an HTTP packet:

- HTTP Header
- /MapleWML/CMServer/FileUpload.asp
- Username
- User Password
- A First Filename
- Size of the file
- Job_ID
- File Content
- HTTP Trailer,

wherein the parameter "Job_ID" identifies the source of the job, especially, where the document to be printed comes from. The parameter "/MapleWML/CMServer/FileUpload.asp" will initiate the central server 106 to retrieve the information contained therein, including the designated document which is contained in "File Content."

The central server 106 then sends the document , as well as the Appliance ID designated in the printing instruction, i.e., the printer name, to the appliance server 116 via the internet 108. The central server 106 locates the appliance server 116 through the appliance server IP Address. The appliances such as the printer 118, a fax machine 120, and a projector 122 are connected to the appliance server 116. The appliance server 116 has been installed with all the necessary applications and drivers of those connected appliances, in particular, printer drivers of the connected printers.

The appliance server 116 converts the document to a format suitable for the designated appliance. In the preferred embodiment, the document is converted to a print job in a Page Descriptive Language (PDL) format. According to the printing instruction, the print job is passed to the designated printer 118 identified by the Appliance Id, i.e., the printer name. A hard copy of the document will be generated thereon.

Alternatively, the user can apply the document to other appliances such as the fax machine 120 or the projector 122. The user needs to designate the appliance in the instructions being sent to the central server 106 by incorporating the appliance name thereof into it. Accordingly, the appliance server 116 converts the retrieved document to a format suitable for the designated appliance and further pass it to the appliance.

In another preferred embodiment according to the invention, when the user wants a printed copy of a document, the user sends the central server 106 a request in the following format:

- WAP Header
- Username
- User Password
- A First Filename
- Appliance ID
- WAP Trailer.

Thus, the central server 106 directly gets the information about the document to be retrieved, as well as the printer to which the document to be printed, without replying to and waiting for selections from the mobile device 100. In this case, the user may need to input the desired First Filename and Appliance ID manually, unless this information is stored in the mobile device.

It is understood that other alternatives can be made to the preferred embodiments. For example, the documents can be forwarded to and stored in the central server 106 in advance such that the central server 106 will retrieve the documents directly from its storage unit (not shown). The appliances can also be connected to the central server 106 directly, in which case the central server 106 also acts as an appliance server.

Furthermore, the user of the mobile device 100 can apply information downloaded from internet to an appliance. In such a case, the central server downloads the information directly from internet according to the instruction from the mobile device. Similarly, the user can also apply emails, with or without attachment, which are saved in an email server 112 to a suitable appliance.

Besides, other mobile devices such as personal digital assistants can be used on condition that they are able to communicate with the gateway 102.

What is claimed is:

1. A process for applying information stored remotely to an appliance via a mobile device, comprising:
the mobile device sending instructions to a first computer system via a first network, the instructions designating a first piece of information to be processed and the appliance to which the first piece of information is to be applied, the appliance being connected to the first computer system;
the first computer system retrieving the first piece of information and converting it to a document suitable for the appliance according to the instructions; and
the first computer system applying the document to the appliance.
2. The process of Claim 1, wherein a plurality of appliances is connected to the first computer system, the mobile device designating a first appliance among said plurality of appliances in the instructions, the first computer system sending the document to the first appliance for processing accordingly.
3. The process of Claim 2, wherein said plurality of appliances is registered in the first computer system.
4. The process of Claim 2, wherein the mobile device designates the first appliance by specifying the appliance name thereof in the instructions.
5. The process of Claim 1, wherein the mobile device designates the first piece of information by incorporating the location thereof into the instructions.
6. The process of Claim 1, wherein the first network includes a gateway with which the mobile device communicates by using standard telecommunication protocols, and the gateway converts the instructions to a format understandable by the first computer system.

7. The process of claim 1, wherein the first piece of information is stored in a second computer from which the first computer system retrieves the information according to the instructions.
8. The process of Claim 1, wherein the appliance is a printer, and the first computer system converts the first piece of information to a print job the format of which is suitable for printing.
9. The process of Claim 9, wherein the first computer system converts the first piece of information to a PDL format for printing.
10. A computer system which allows a mobile device to apply information stored remotely to an appliance designated by the mobile device, comprising:
an interface for receiving instructions from the mobile device via a first network, the instructions designating a first piece of information to be processed and the appliance to which the first piece of information is to be applied, the appliance being connected to the first computer;
a sub-computer system for processing the instructions, retrieving the first piece of information, and further passing the information to the appliance for processing.
11. The system of Claim 10, wherein the mobile device designates the first piece of information by incorporating the location thereof into the instructions such that the computer system is capable of retrieving the first piece of information
12. The system of Claim 10, wherein the sub-computer system converts the information to a format suitable for the appliance.
13. The system of Claim 12, wherein the appliance is a printer, and the sub-computer system converts the first piece of information to a print job the format of which is suitable for printing.

14. The system of Claim 10, wherein the first piece of information is stored in a second computer being connected to said system.

METHOD AND APPARATUS FOR APPLYING INFORMATION
REMOTELY VIA A MOBILE DEVICE

ABSTRACT

A method and apparatus for applying information stored remotely to an appliance via a mobile device are provided. The mobile device initiates the process by sending instructions to a computer system via a network. The instructions designate a first piece of information to be processed as well as the appliance to which the information is to be applied. According to the instructions, the computer system retrieves the first piece of information and converts the information to a document suitable for the appliance. The computer system then applies the document to the designated appliance.

Figure 1

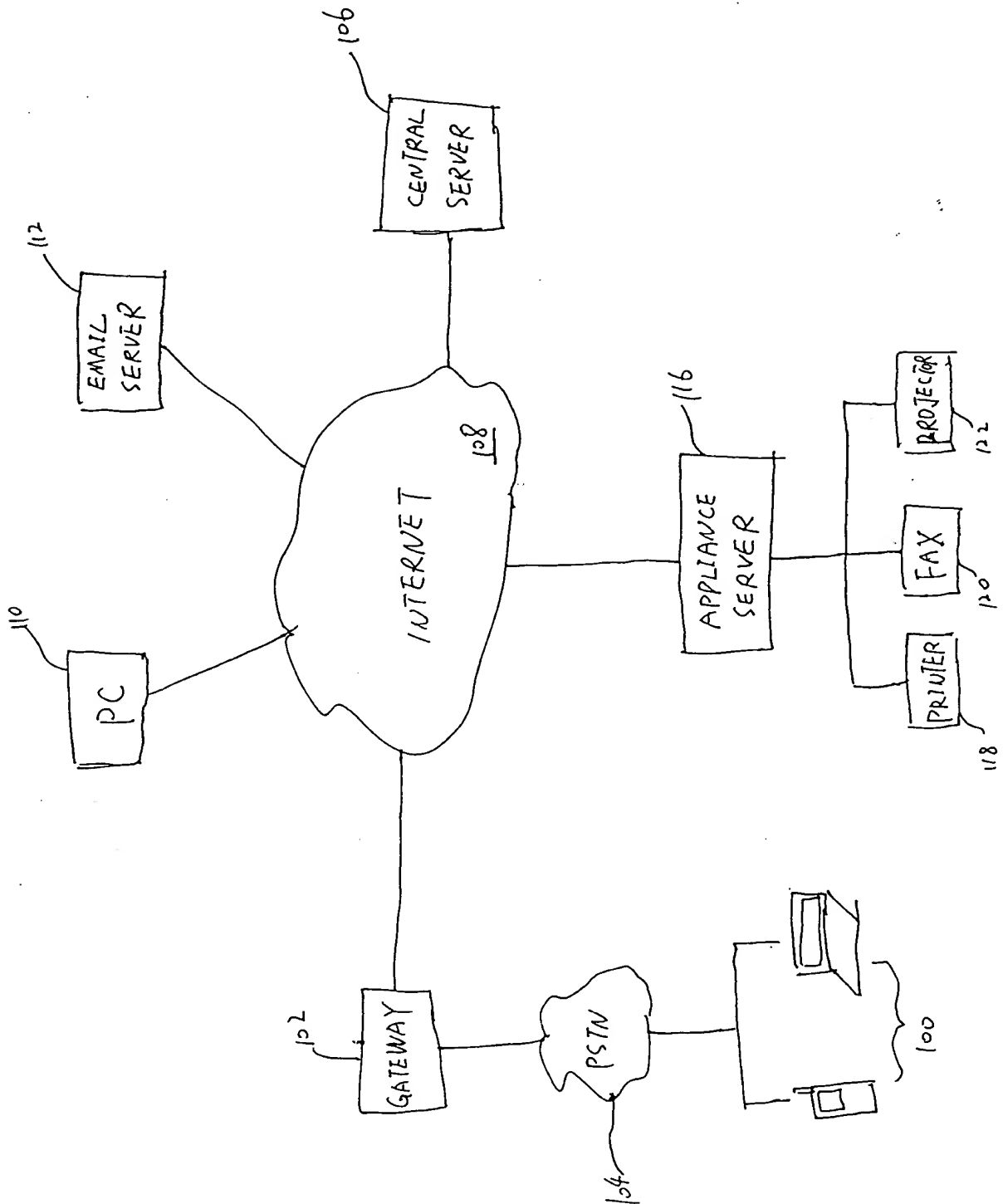


FIGURE 1